

Using GIS for Radiological Event Training & Exercises

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Goals of Exercises

- Test and evaluate the plan
- Identify areas for improvement
- Maintain familiarity with the type of actions required by the plan
- Develop and improve skills should the plan need to be used in real life.

Testing Emergency Plans

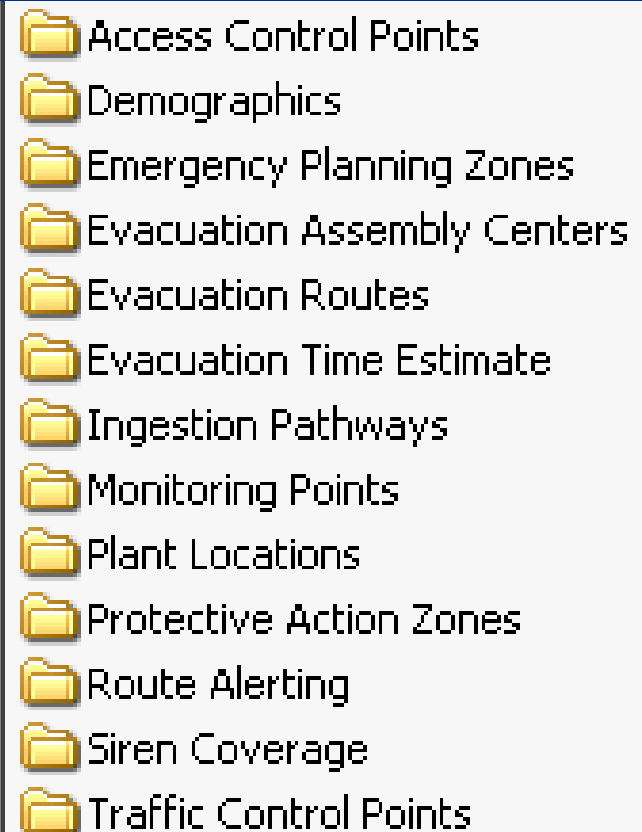
- Is there adequate familiarity with the plan?
 - Do the field responders and EOC augmentation staff (including GIS staff) have familiarity with the plan?
- Does the plan match up with reality?
 - Are the items identified with the plan accurate?
 - Examples – New street names, relocated facilities, new subdivisions
- Are there appropriate communication pathways?
 - Is there a primary system for communication?
 - Are backup systems identified and tested?

GIS and the Radiological Emergency Response Plan (RERP)

Planning Process

Step 1 - Identify Plan Components

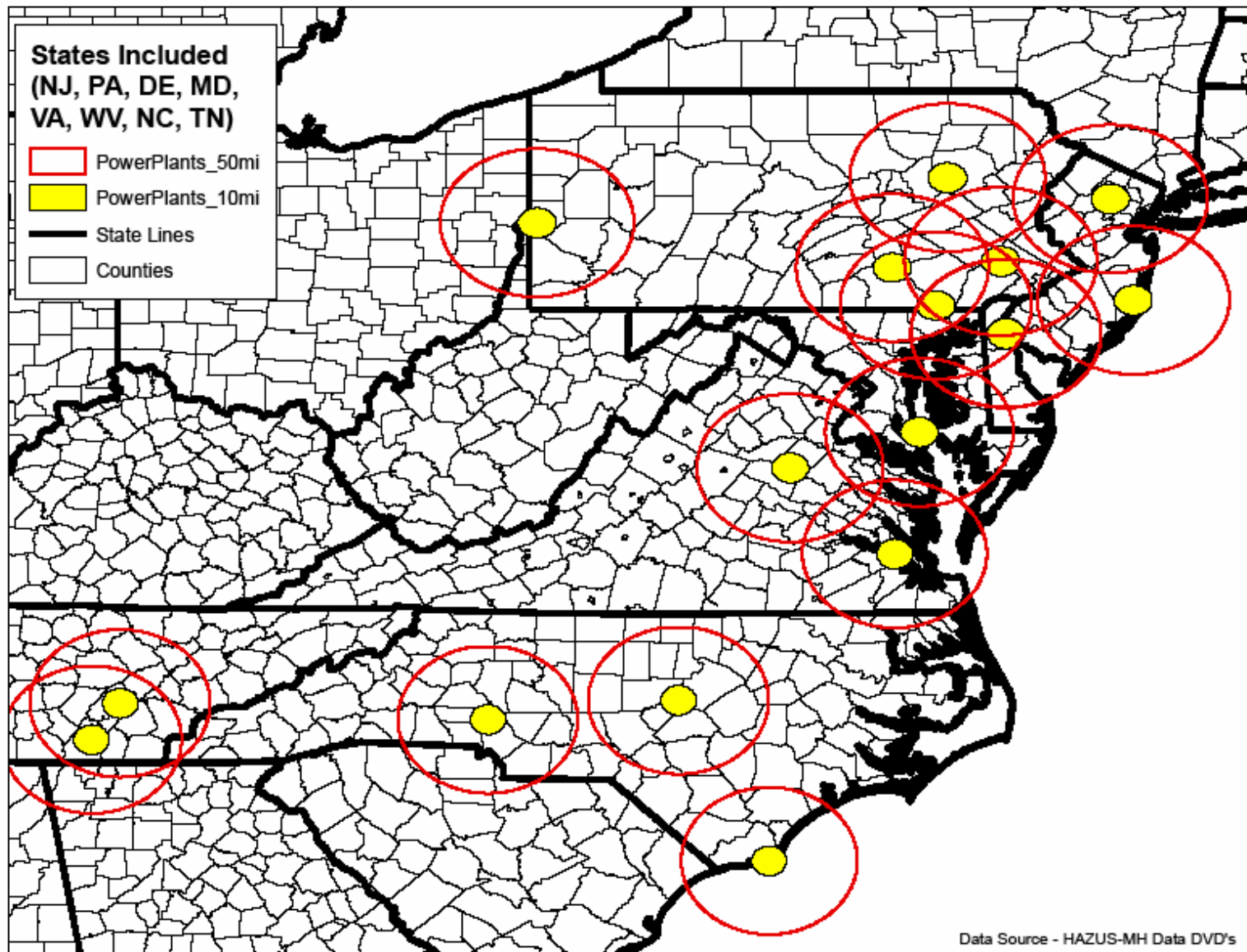
- Create a folder for all RERP related components
- Create sub-folders for the individual areas that make up the plan



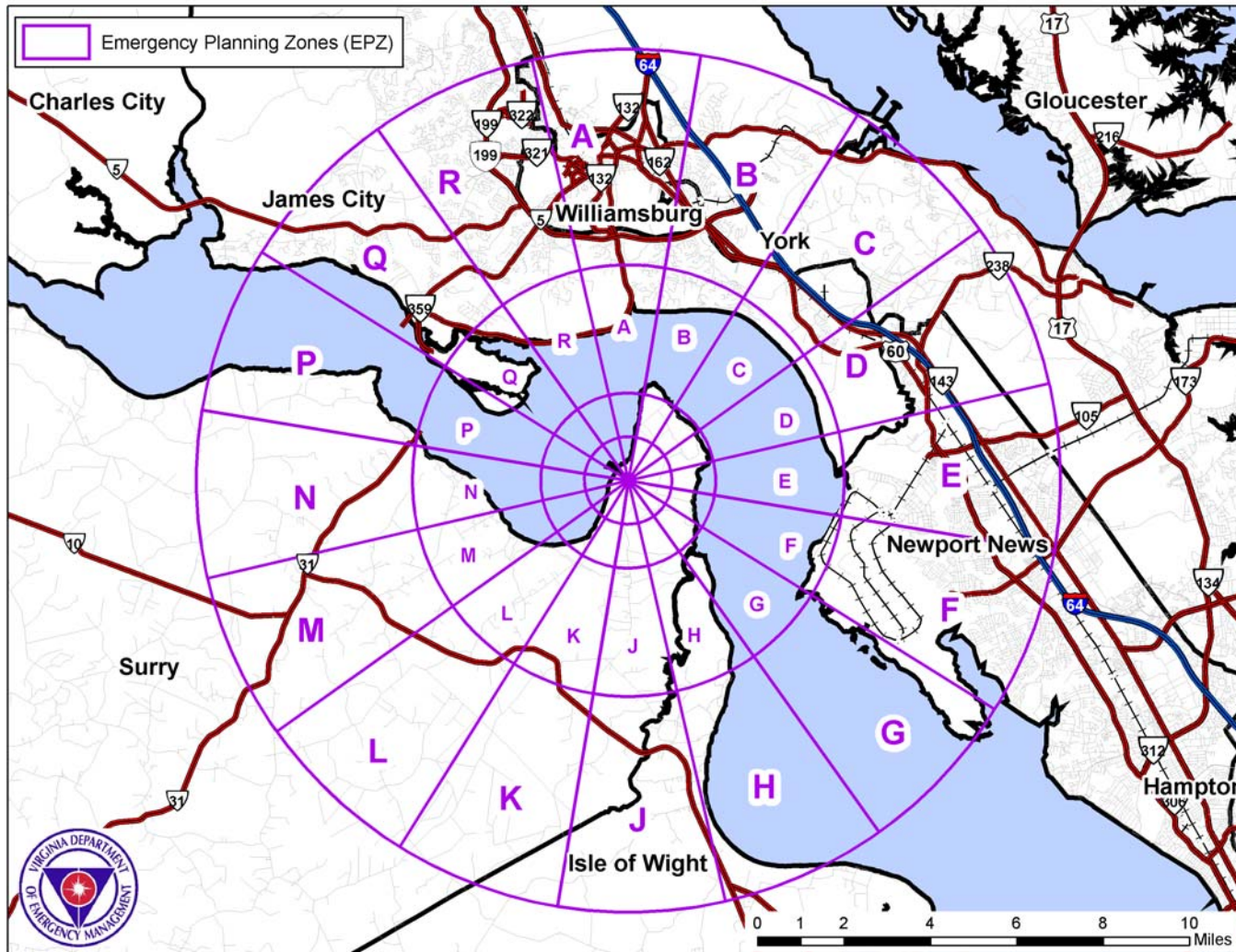
Step 2 – Create data layers for each component of the plan

- Start at the lowest common denominator, and begin to walk through the plan
- 1. Plant Location (Hazard)
- 2. Emergency Planning Zones (Buffer)
- 3. Siren Coverage (Public Notification)
- 4. Protective Action Zones (Action)
- 5. Evacuation Assembly Centers (Where to go)
- 6. Evacuation Routes (How to get there)
- 7. Traffic Control Points (Improving traffic flow)

1. Plant Locations



2. Emergency Planning Zones (EPZ)



1,2,5,10 Mile
buffer zones
around the
facility

Broken up into
sectors (A-R)

Allows for
identification of
impact zones by
standardized
letter/number
combinations.

3. Notification Sirens

Located within the 10 mile EPZ

If you hear sirens, you should tune in to your local Emergency Alert System (EAS) radio or television station for emergency information and instructions.

The sirens are not a signal to evacuate. Your area may not be affected by an emergency, or you may be asked simply to remain indoors for a period of time. You will be given specific instructions about whether to stay inside, leave the area or take other protective action

Fixed Sirens – Known coordinates, and are usually visible on aerial photography.

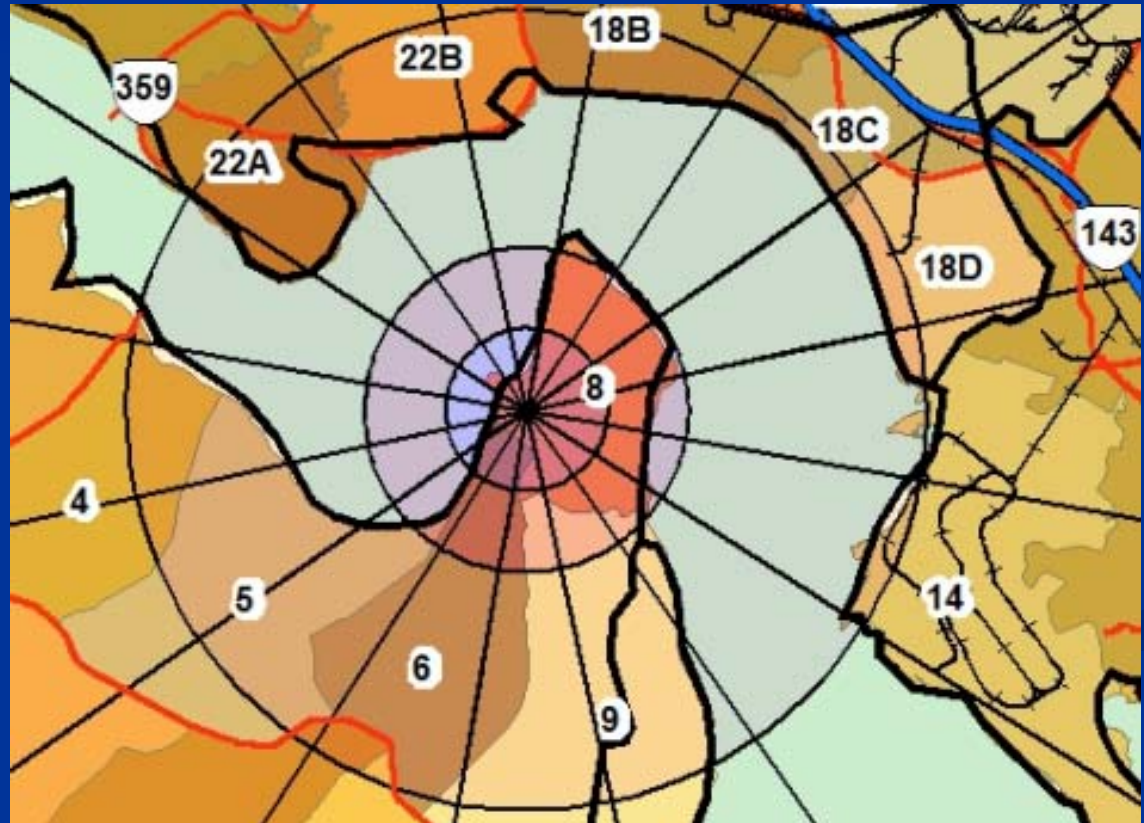
Siren Range – Approximately 1 mile

Areas not covered by the 1 mile buffer will be alerted by a law enforcement vehicle using vehicle sirens



4. Protective Action Zones

- Boundaries are defined by easily referenced geographic features (roads, creeks, lakes, rivers)
- PAZ's are used to communicate evacuation or shelter-in-place orders to the general public.



GIS and the Radiological Emergency Response Plan (RERP)

Exercise / Evaluation

Exercise Schedule

Recurrence Period – Every Year

Type of exercise – Graded

2006-2008 Schedule

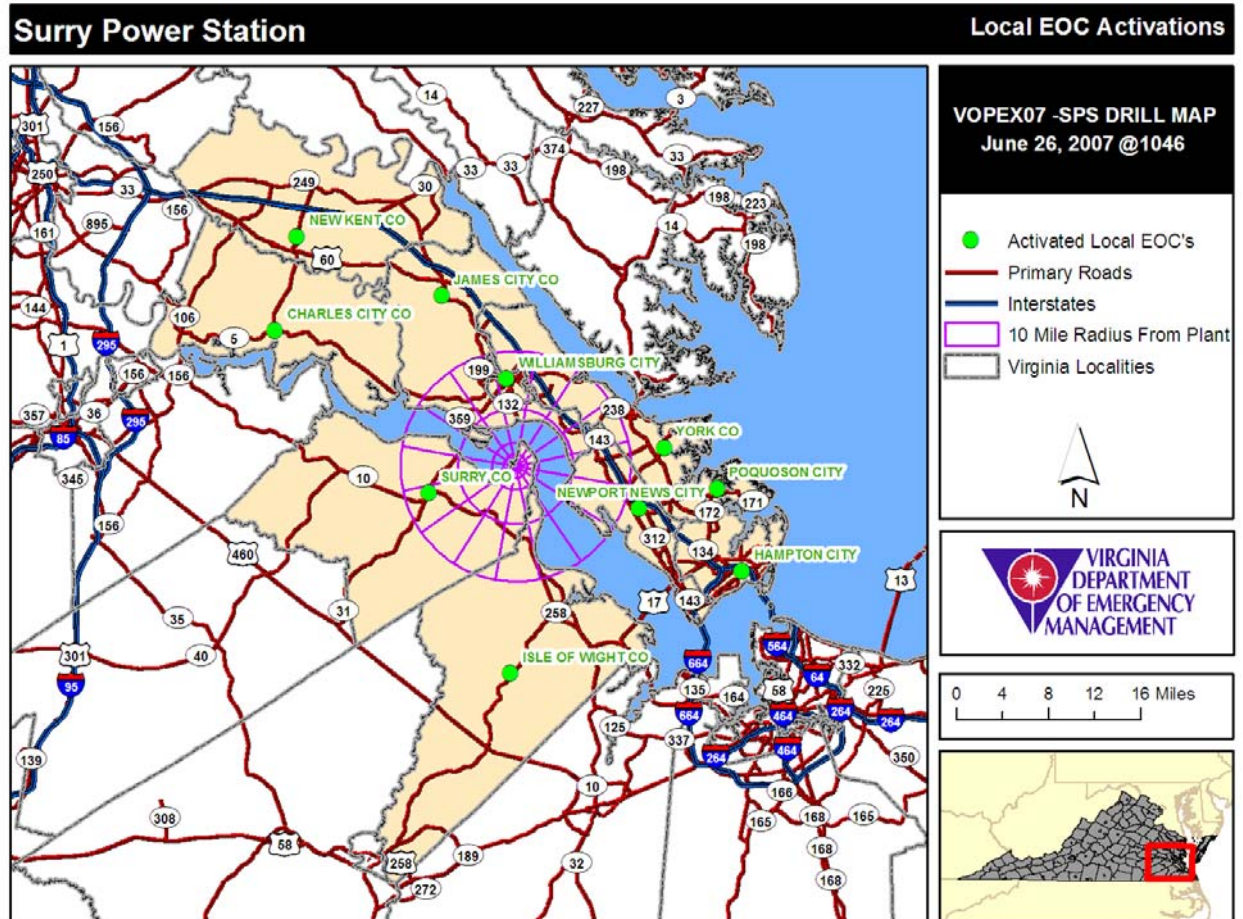
- 2006 February – Surry
- 2006 December – North Anna
- 2007 June – Surry
- 2008 July – North Anna (50 Mile Ingestion Pathways Exercise)

Exercise Components

1. An incident occurs, affecting one of the nuclear power stations.
2. There are four alerting levels for incidents at the nuclear power stations (Unusual Event, Alert, Site Area Emergency, General Emergency)
3. At the “Alert” level, the local and state EOC’s in the affected area ramp up in case the situation gets worse.
4. At this point, there is no release of radioactive material, and no evacuations are needed.

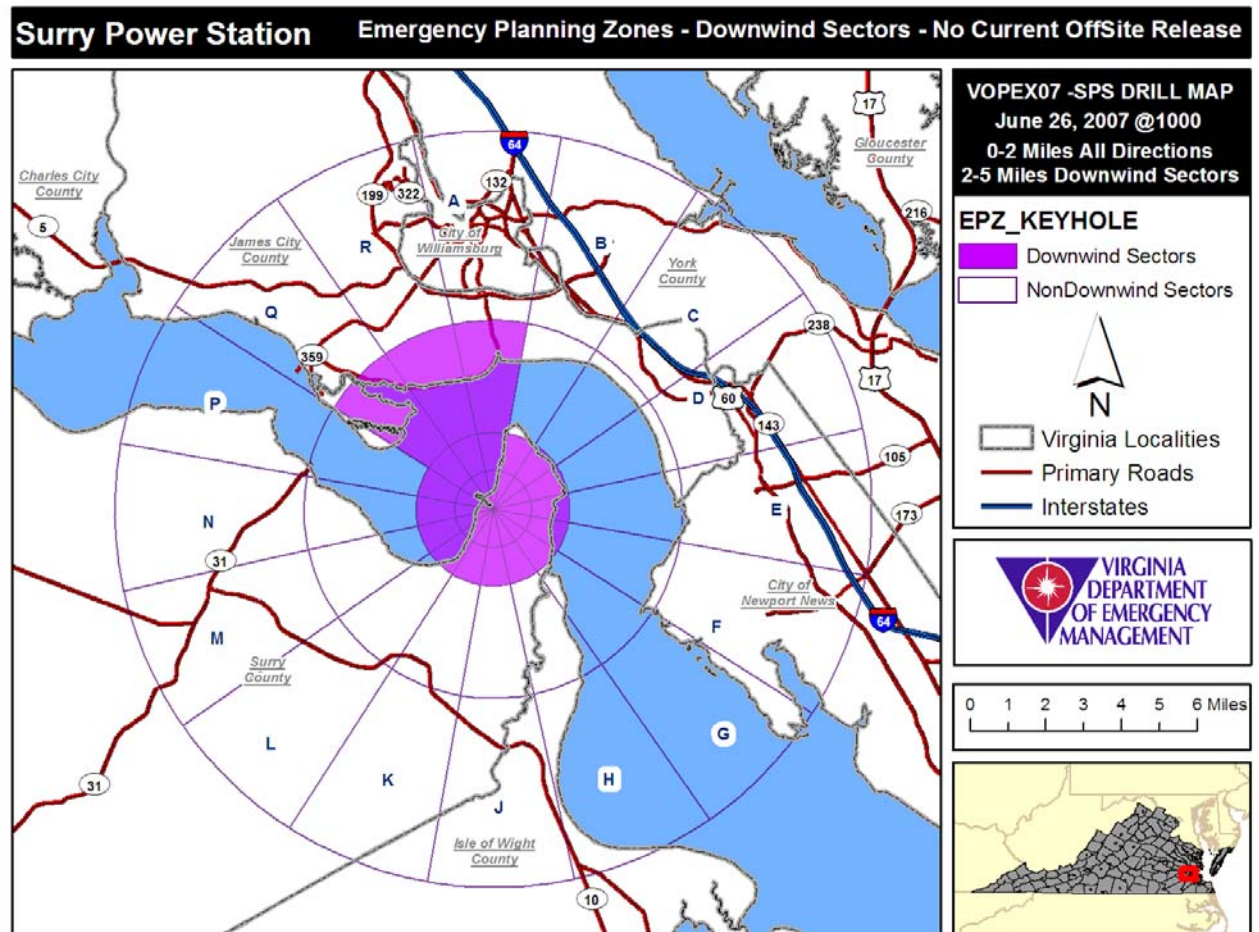
Local EOC Status

5. What is the status of locality EOC's?



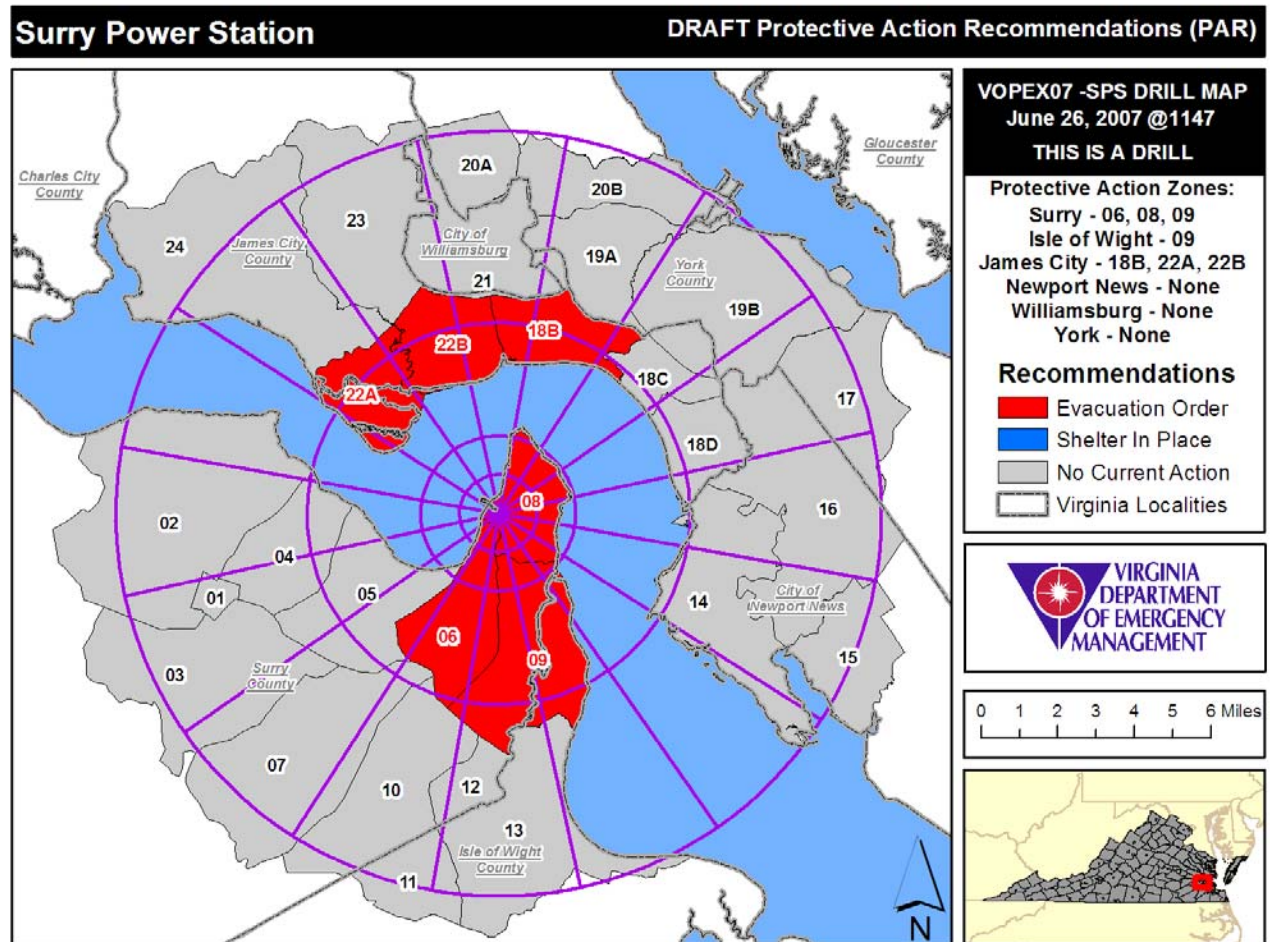
Identify Downwind Sectors

6. What direction is the wind blowing in the event that a release does occur?



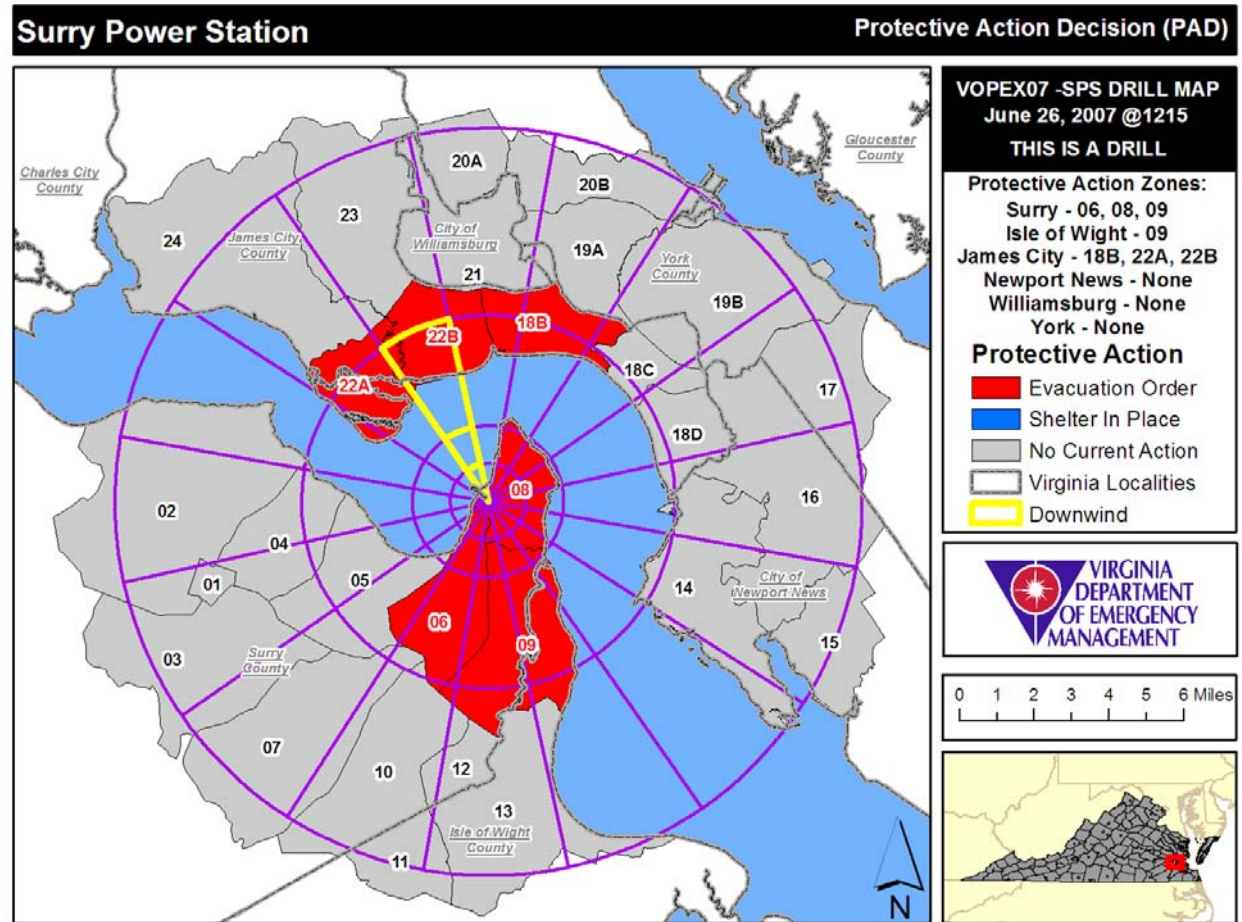
Protective Action Recommendation

6. If protective action is needed, which areas need to evacuate or shelter in place?



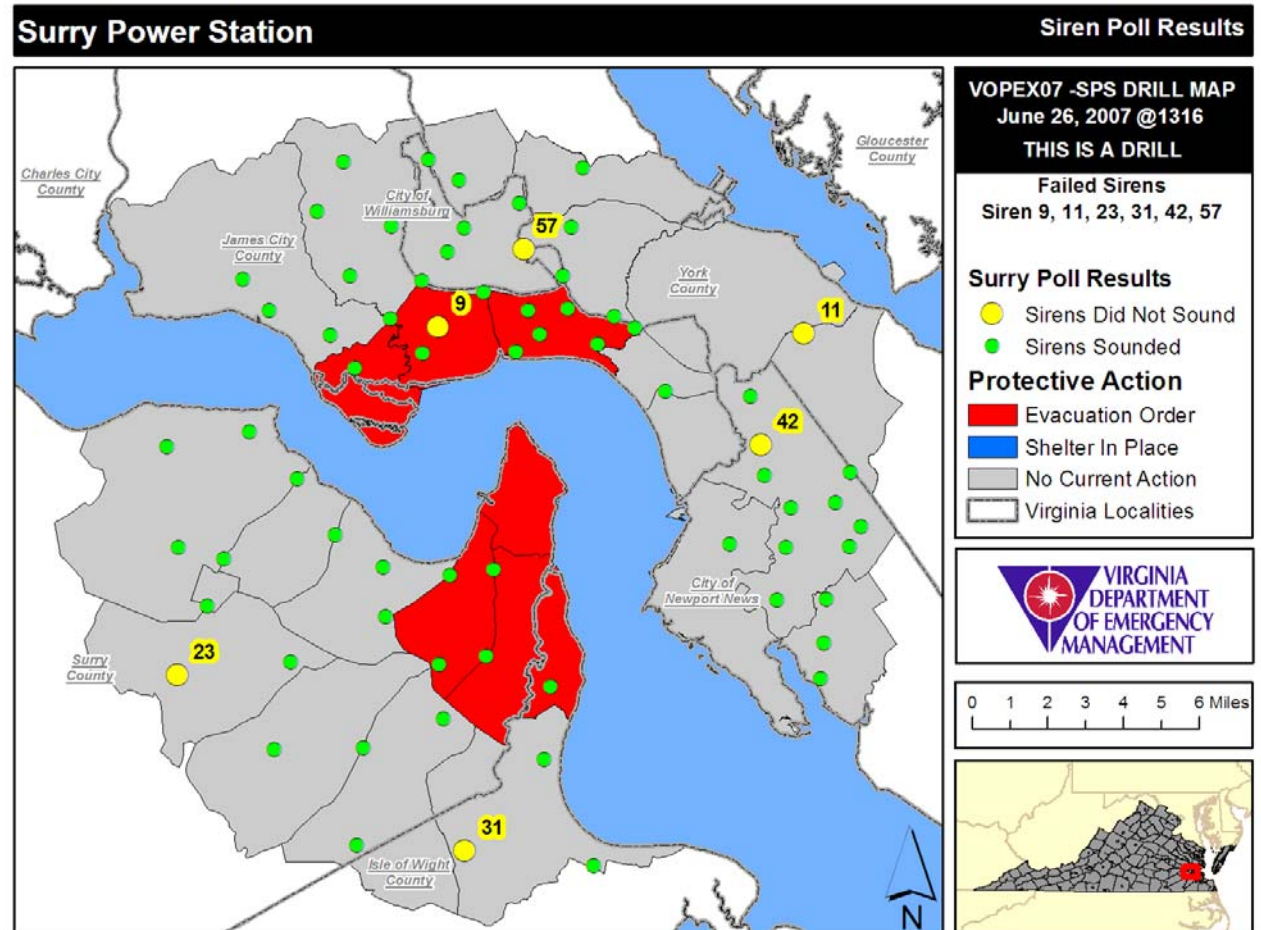
Disseminate the Approved Protective Action Decision

7. The protective action decision is made by the Governor during a radiological emergency.



Alert the Public Using Sirens

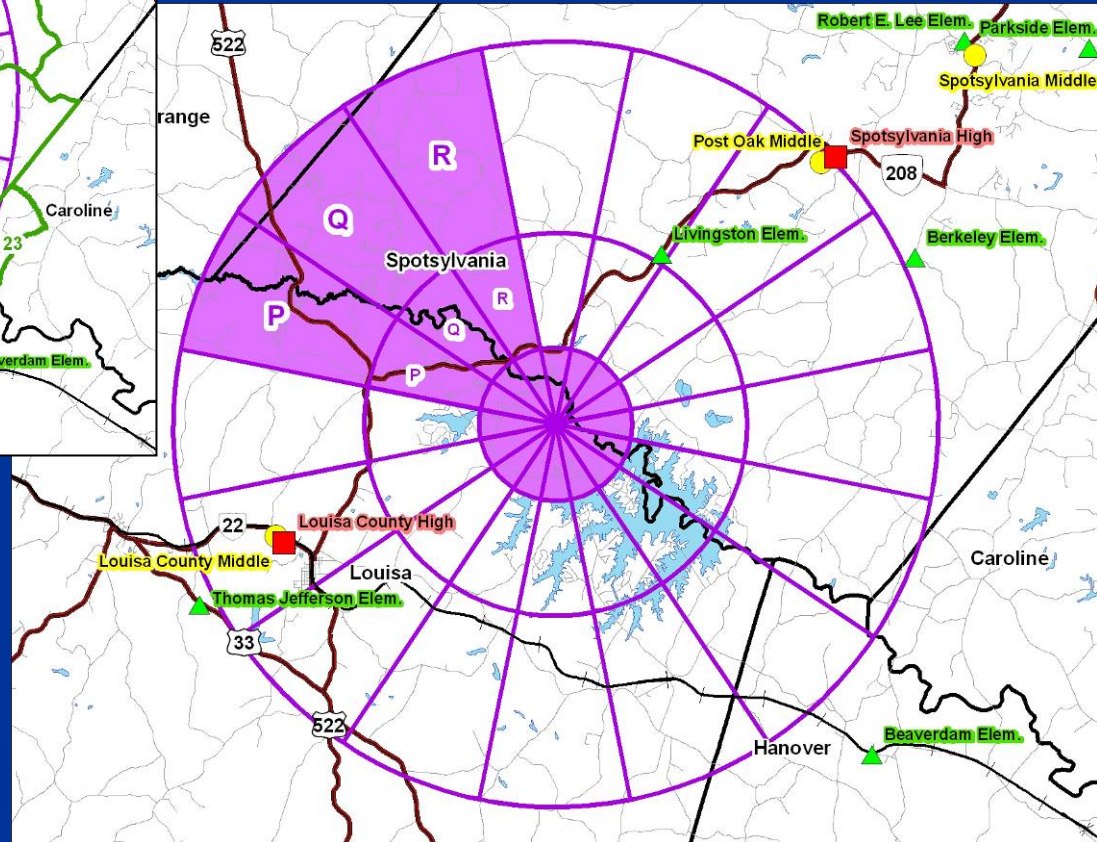
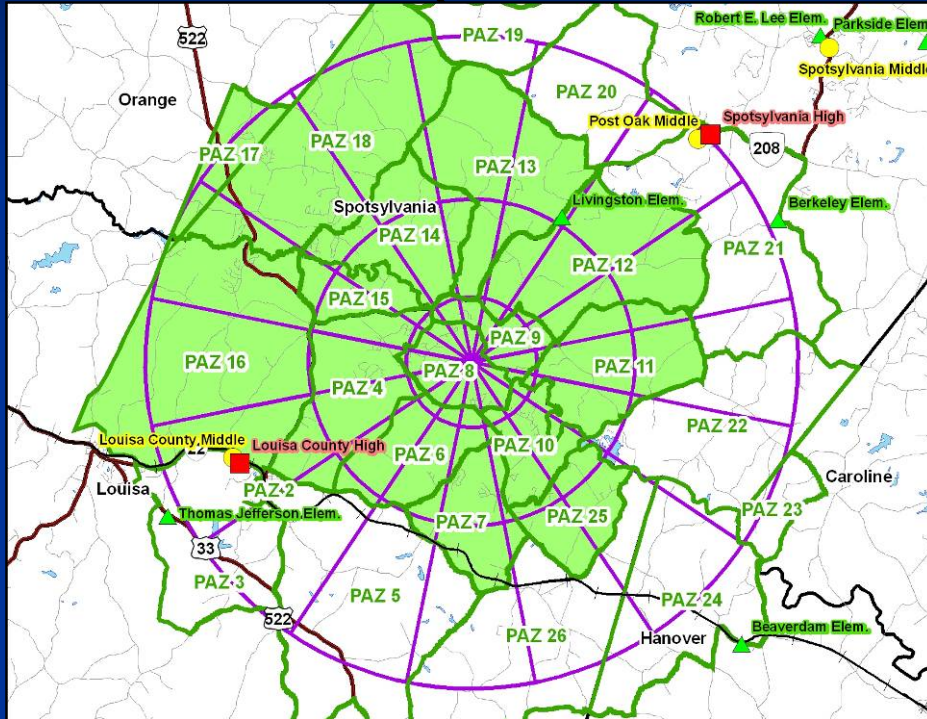
8. Sound the sirens. If sirens do not sound, then those areas need to be alerted through backup alerting.



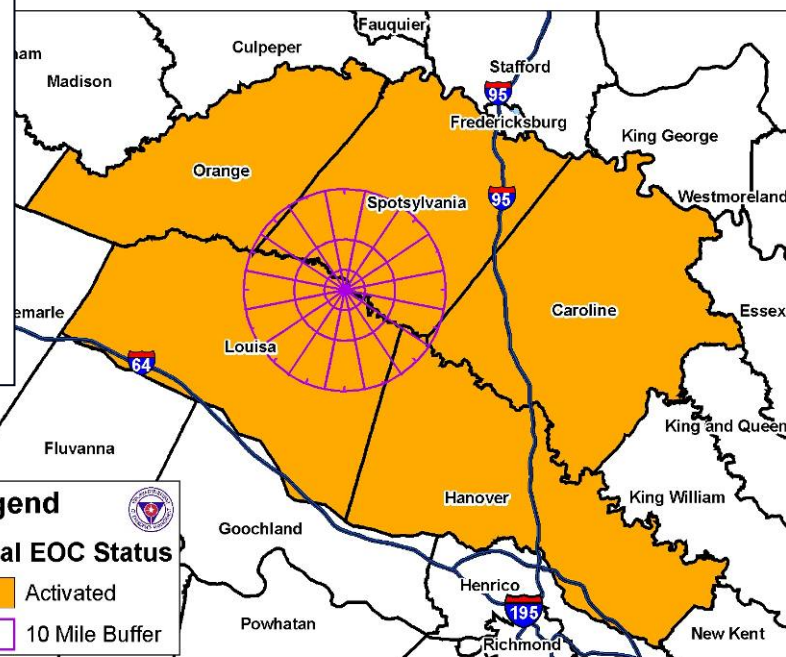
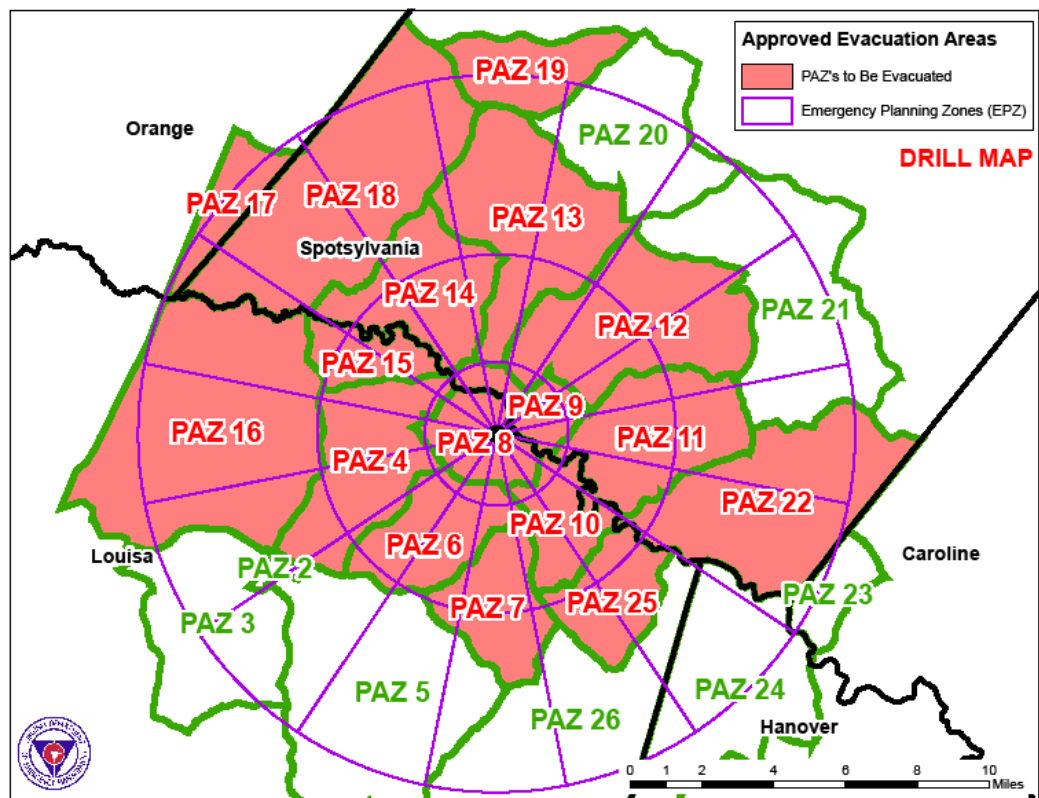
Areas for Continual Improvement

- Identify additional layers that might be used during a radiological emergency, and allow for easier discovery of those data layers (Virginia Metadata Portal)
 - Facilities (schools, nursing homes, hospitals, daycare centers, etc)
 - Ingestion Pathways (dairies, food stores, water supply points)
- Explore more effective ways to disseminate geospatial information
 - Use of Web Mapping Applications (ArcIMS, ArcGIS Server, etc)
 - Use of Web Map Services (WMS) that allow a remote user to overlay information from an off-site resource.

Product Development (2006 Dress Rehearsal)



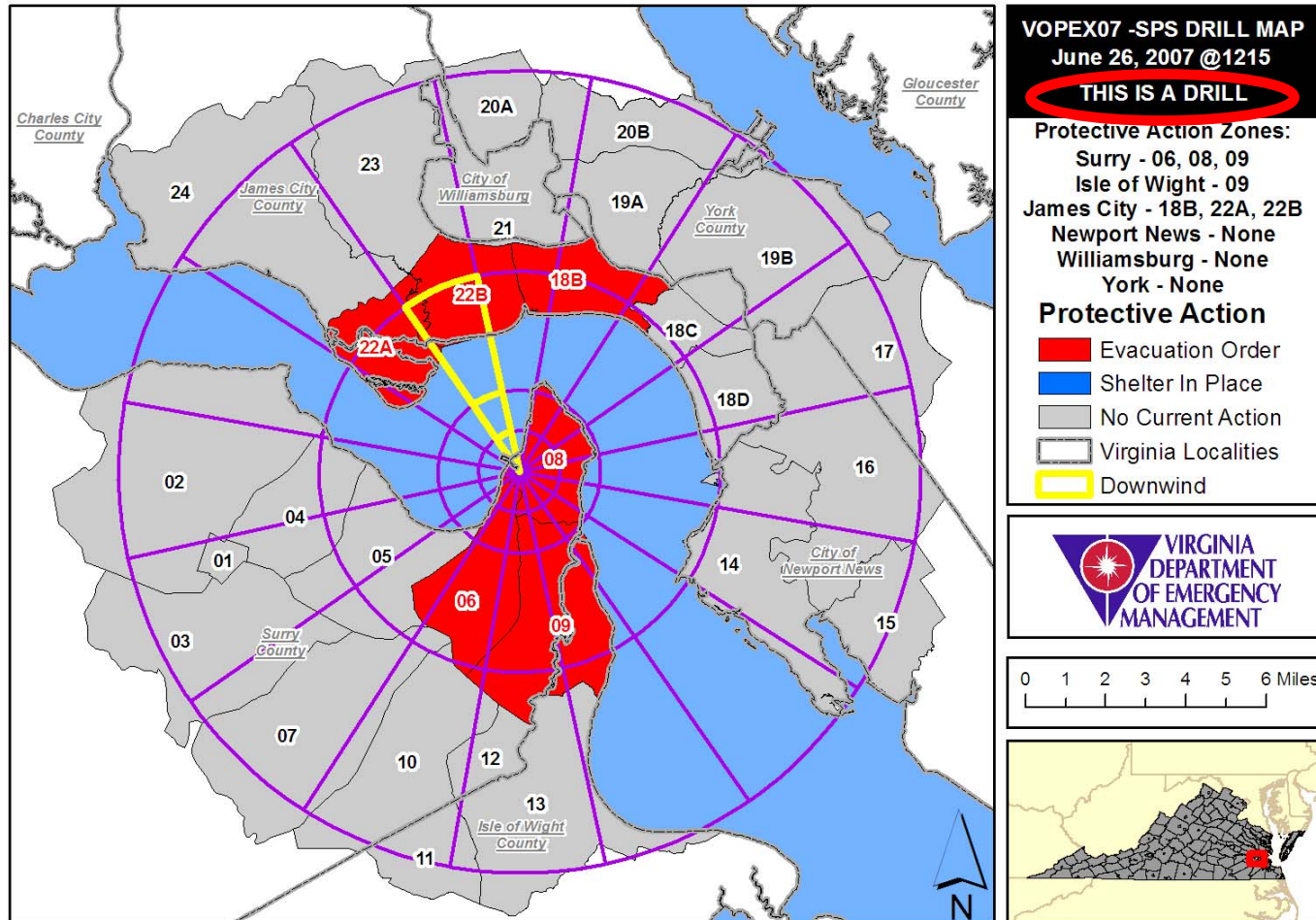
Product Development (2006 Exercise)



Product Development (2007 Exercise)

Surry Power Station

Protective Action Decision (PAD)



Product
Name

Date/Time
Stamp

LEGEND

SCALE
BAR

INSET
MAP

Questions / Comments?